

Listing of the Claims:

1. (Currently amended) A lithium ion battery comprising:
a cathode;
an anode; and
an electrolyte layer formed between the cathode and the anode,
wherein the cathode, the anode, and the electrolyte layer constitute a cell element,
and
wherein the electrolyte layer comprises an arrangement of individual insulating particles with a plurality of interstitial spaces therebetween, with electrolytes occupying at least some of the interstitial spaces.
2. (Currently amended) [[A]] The battery according to claim 1, wherein the individual insulating particles are placed between the cathode and the anode so that the facing sides of the cathode and the anode do not contact each other.
3. (Currently amended) [[A]] The battery according to claim 1, wherein a void ratio of the interstitial spaces to the individual insulating particles in the electrolyte layer is 50-90%.
4. (Currently amended) [[A]] The battery according to claim 1, wherein a mean radius of the individual insulating particles is 0.05-10 μm .
5. (Currently amended) [[A]] The battery according to claim 1, wherein a thickness of the electrolyte layer is 10 μm or less.
6. (Currently amended) [[A]] The battery according to claim 1, wherein the electrolyte layer is a solid electrolyte layer.

7. (Currently amended) [[A]] The battery according to claim 1, wherein the individual insulating particles comprise olefin resins.

8. (Currently amended) [[A]] The battery according to claim 1, wherein the individual insulating particles are inorganic oxides.

9. (Currently amended) [[A]] The battery according to claim 1, wherein the cathode comprises a cathode active material that is formed using lithium-transition metal composite oxides, and wherein the anode comprises an anode active material that is formed using carbon- or lithium-transition metal composite oxides.

10. (Currently amended) A method for manufacturing a battery comprising:
applying individual insulating particles and an electrolytic polymer to form an electrolyte layer, wherein the electrolytic polymer occupies at least some of a plurality of interstitial spaces between the individual insulating particles; and

layering the electrolyte layer between a cathode and an anode, wherein the cathode and the anode are facing each other.

11. (Currently amended) The method according to claim 10, wherein the electrolyte layer is formed by applying the individual insulating particles and the electrolytic polymer through a nozzle of an ink-jet printer.

12. (Currently amended) The method according to claim 10, wherein the individual insulating particles and electrolytic polymer are applied simultaneously to form a solid electrolyte battery.

13. (Currently amended) The method according to claim 10, wherein the individual insulating particles and electrolytic polymer are applied separately to form a solid electrolyte battery.

14. (Original) The method according to claim 10, wherein the thickness of the electrolyte layer is 10 μm or less.

15. (Currently amended) A battery assembly comprising multiple connected batteries, wherein each of the connected batteries comprises:

layered cell elements including a cathode and an anode that are facing each other;
and

an electrolyte layer between the cathode and the anode,
wherein lithium ions can be inserted into and removed from the cathode and the anode through the electrolyte layer,

wherein the electrolyte layer comprises individual insulating particles and electrolytes, and

wherein the electrolytes occupy at least some of a plurality of interstitial spaces between the individual insulating particles.

16. (Currently amended) A vehicle having a battery assembly comprising multiple connected batteries mounted as a power supply for a drive train of the vehicle, wherein each of the connected batteries comprises:

layered cell elements including a cathode and an anode that are facing each other;
and an electrolyte layer between the cathode and the anode,

wherein lithium ions can be inserted into and removed from the cathode and the anode through the electrolyte layer, and

wherein the electrolyte layer comprises individual insulating particles and

electrolytes positioned such that the electrolytes occupy at least some of a plurality of interstitial spaces between the individual insulating particles.

17. (Currently amended) A method of manufacturing a lithium ion battery comprising:
applying individual insulating particles on a substrate with a first coating means;
applying an electrolytic polymer in at least some of a plurality of interstitial spaces and between the individual insulating particles with a second coating means to form an electrolyte layer; and
layering the electrolyte layer between a cathode and an anode.

18. (Original) The method of claim 17, wherein the cathode and the anode are facing each other.

19. (Original) The method of claim 18, wherein lithium ions can be inserted into and removed from the cathode and the anode through the electrolyte layer.

20. (New) The battery according to claim 1, wherein the arrangement of individual insulating particles is a patterned arrangement.

21. (New) The battery according to claim 20, wherein the patterned arrangement is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

22. (New) The method according to claim 10, wherein the individual insulating particles and an electrolytic polymer are applied in a pattern.

23. (New) The method according to claim 22, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

24. (New) The battery assembly according to claim 15, wherein the electrolyte layer comprises individual insulating particles and electrolytes arranged in a pattern.

25. (New) The battery assembly according to claim 24, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

26. (New) The vehicle according to claim 16, wherein the electrolyte layer comprises individual insulating particles and electrolytes arranged in a pattern.

27. (New) The vehicle according to claim 26, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.

28. (New) The method according to claim 17, wherein the individual insulating particles are applied in a pattern.

29. (New) The method according to claim 28, wherein the pattern is at least one of alternating rows of the individual insulating particles and the electrolyte, circles of the individual insulating particles and the electrolyte, columns formed by the adjacent individual insulating particles linearly connected with each other, a lattice-like arrangement, and columns formed by the adjacent insulating particles connected with each other in a zigzag.